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Introduction

In a social studies class a teacher is presenting a lesson on the United States Congress. The students are discussing in small groups the reasons why citizens want to be representatives in Congress. One student says the major reason is wanting to help your neighbors and your country. Another student says being a member of Congress is just a way to get rich, and quotes Roger Mudd (CBS News, December 24, 1976) that a representative in Congress receives more than $400,000 per year in salary and benefits. Voices rise as the argument continues. What does the teacher do? Would the teacher encourage the argument, helping students find evidence to support and argue their positions? Or would the teacher try to calm things down and change the topic of discussion?

Within any learning situation such conflicts among ideas or opinions are inevitable. They will occur no matter what the teacher does. Learning situations are filled with conflicts among students, between the teacher and the student, and between what a student presently understands and new information being learned. And the current evidence indicates that in most classrooms conflicts are avoided and suppressed (DeCecco & Richards, 1974) and that teachers and students lack the skills and procedures needed for effective conflict management (Deutsch, 1973; Blake & Mouton, 1970; Johnson, 1970) By avoiding and suppressing certain types of conflicts teachers lose valuable opportunities to increase student motivation, creative insight, cognitive development, and learning. Conflicts have the potential for producing both

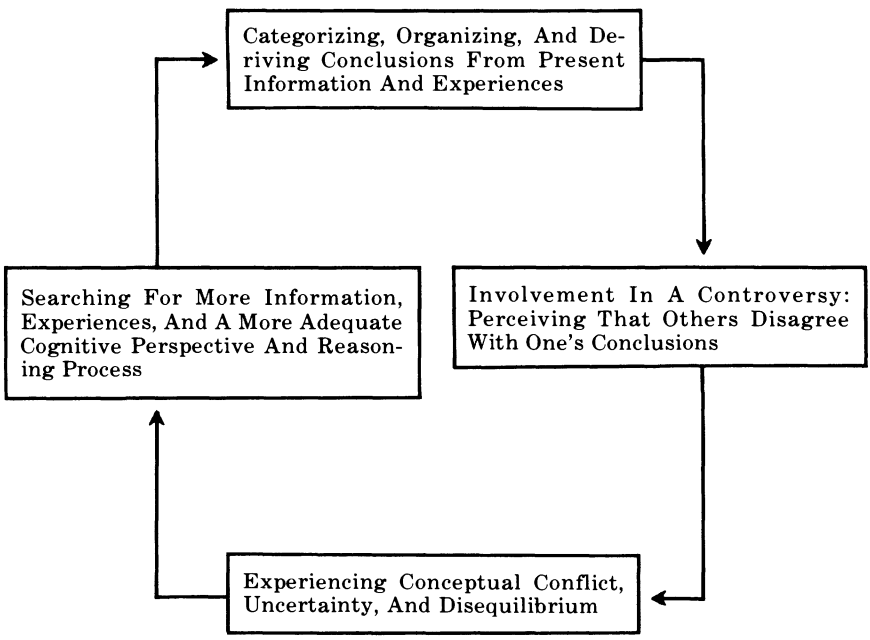
highly constructive or highly destructive outcomes, depending on how they are managed.

Within this article, controversy, the most important type of conflict for increasing the quality of students' learning experiences, is defined. The potential constructive outcomes are then detailed. Finally, the conditions affecting whether or not the outcomes of the conflict are constructive are discussed.

Definition And Process

While most people can easily recognize when they or others are in a conflict, the concept of conflict has not been an easy one for psychologists to define. In trying to define conflict, some psychologists have mentioned frustration, others have focused on decisions among attractive or unattractive alternatives, and some have concentrated on the feelings of the people involved (such as rage, anger, distrust, and rejection). Probably the most influential definition is that of Deutsch (1969). He states that a *conflict* exists whenever incompatible activities occur. An activity that is incompatible with another activity is one that prevents, blocks, interfers with, injures, or in some way makes the

Figure 1
The Process Of Controversy



second activity less likely or less effective. The type of conflict that is the focus of this article is controversy. *Controversy* exists when one person's ideas, information, conclusions, theories, or opinions are incompatible with those of another person, and the two seek to reach an agreement. The conflict resides in the two people's attempt to resolve their disagreement. A closely related type of conflict is *conceptual conflict*, which exists when two incompatible ideas exist simultaneously within a student's mind and must be reconciled (Berlyne, 1975, 1966). A common source of conceptual conflict is receiving new information which does not fit with what one already knows (Hunt, 1964).

The process by which controversy sparks learning is outlined in Figure 1. It begins, as does all learning, with a student categorizing and organizing his present information and experiences so that a conclusion is derived. When the student realizes that other students or the teacher have a different conclusion and that they challenge and contest his conclusion, a state of internal conceptual conflict, uncertainty, or disequilibrium is aroused. The uncertainty motivates an active search—called epistemic curiosity by Berlyne (1971)—for more information, new experiences, and a more adequate cognitive perspective and reasoning process in hopes of resolving the uncertainty. The more adequate cognitive perspective and reasoning process is derived from more accurately understanding the cognitive perspective and reasoning process of the student's opponents and adapting his own cognitive perspective and reasoning process accordingly. Out of the argumentation and debate a joint agreement is reached as to the correct conclusion. In reaching the joint conclusion the student employs his new cognitive perspective and reasoning process, which results in a higher quality and more creative conclusion than the one he originally held. This process can be repeated.

This hypothesized process makes several assumptions that need to be empirically verified. First, it is assumed that controversy arouses conceptual conflict and a subjective feeling of uncertainty. Second, it is assumed that conceptual conflict leads to epistemic curiosity. Third, it is assumed that epistemic curiosity leads to deriving a more adequate cognitive perspective and reasoning process, presumably through understanding more accurately the cognitive perspective and reasoning process of one's opponents. Finally, it is assumed that a more creative and higher quality conclusion is derived, reflected in the agreement made among the students involved in the controversy. Each of these assumed outcomes of controversy is discussed below.

Conceptual Conflict And Epistemic Curiosity

Controversy among students or between the students and the teacher creates conceptual conflict and epistemic curiosity within students. Disagreement with another person can be a source of conceptual conflict that provokes attempts to explore the other person's ideas (Berlyne, 1966). Conceptual conflict has high arousal potential, motivating attempts to resolve it by seeking new information or by trying to reorganize the knowledge one already has (Berlyne, 1960, 1963, 1965; Burdick & Burnes, 1958; Gerard & Greenbaum, 1962; Kiesler & Pallak,

1976). The greater the disagreement among students or between the teacher and the students, the more frequently the disagreement occurs, the greater the number of people disagreeing with a student's position, the more competitive the context of the controversy, and the more affronted the student feels, the greater the conceptual conflict and uncertainty the student will experience (Asch, 1952; Burdick & Burnes, 1958; Festinger & Maccoby, 1964; Gerard & Greenbaum, 1962; Grimme & Johnson, 1978; Inagaki & Hatano, 1968, 1977; Tjosvold & Johnson, 1977, 1978; Tjosvold, Johnson, & Fabrey, 1978; Worchel & McCormick, 1963). Thus, there is evidence that controversy can create conceptual conflict and epistemic curiosity.

Accuracy Of Cognitive Perspective-Taking

In resolving controversies students need to be able to both comprehend the information being presented by their opposition and understand the cognitive perspective their opposition is using to organize and interpret the information. A *cognitive perspective* consists of the cognitive organization being used to give meaning to a person's knowledge and the structure of a person's reasoning. Tjosvold and Johnson (1977, 1978) and Tjosvold, Johnson, and Fabrey (1978) found that the presence of controversy promotes greater understanding of another person's cognitive perspective than does the absence of controversy. Subjects engaging in a controversy were better able to predict subsequently what line of reasoning their opponent would use in solving a future problem than were subjects who interacted without any controversy. Kurdek (in press) found that good cognitive perspective-taking skill was related to quarrelling and arguing with peers in students from grades one through four. These findings are especially important as accurate perspective-taking is central to cognitive development, moral reasoning, self-esteem, social intelligence, cooperation, communication effectiveness, problem-solving, and conflict resolution (Asch, 1952; Falk & Johnson, 1977, Flavell, 1968; Johnson, 1971b, 1975a, 1975b, 1977; Kohlberg, 1969; Mead, 1934; Piaget, 1948, 1950; Rogers, 1951).

Transition From One Stage Of Cognitive Reasoning To Another

Cognitive development theorists (Flavell, 1963; Kohlberg, 1969; Piaget, 1948, 1950) have posited that it is repeated interpersonal controversies, arguments, and disagreements (in which the person is forced again and again to take cognizance of the perspective of others) that promote cognitive and moral development, the ability to think logically, and the reduction of egocentric reasoning. Such interpersonal conflicts are posited to create disequilibrium within a person's cognitive structures, which motivates a search for a more adequate and mature process of reasoning. There are several studies which have found that pairing a conserver with a nonconserver and giving the pair conservation problems to solve, the conserver's answer prevails on the great majority of conservation trials (Botvin & Murray, 1975; Miller & Brownell, 1975; Murray, 1972; Murray, Ames, & Botvin, 1977; Silver-

man & Geiringer, 1973; Smedslund, 1961a, 1961b; Silverman & Stone, 1972). The solution of the problems is not based on general social dominance, but rather on the greater certainty and superior logic of the conservers (Miller & Brownell, 1975). Murray (1972) used a three person discussion group in which one nonconserver and two conservers reached a group decision as to the answer to a series of conservation problems. When tested later individually, all subjects made significant gains in conservation judgments and explanations on the same problems, as well as on parallel forms of the problems and on new conservation problems; nonconservers made the greater gains. Murray and Botvin (Note 1) and Murray, Ames, and Botvin (1977) demonstrated that when internal disequilibrium was created by having nonconserving subjects argue publicly for correct solutions of conservation problems, the subjects increased in ability to solve correctly conservation problems compared to a control group who did not publicly espouse a conservation position. These gains, furthermore, were not extinguished when the subjects then publicly argued an incorrect nonconserving solution to conservation problems. Jensen and Larm (1970) conducted a similar study in which they found that argumentation among subjects increased their ability to include intentions as well as consequences in making judgments in response to stories compared to a control group and subjects who were reinforced for including intentions as well as consequences in their judgments. Taken together, these studies indicate that controversy among students, and the conceptual conflict it generates, is an important factor in cognitive growth.

Besides the research on Piaget's theory of cognitive development, there are several studies, based primarily on Kohlberg's (1969) theory of moral development, investigating the experiences that lead to a transition to higher stages of moral reasoning. The basic format of these studies is to place subjects in a situation requiring the making of a decision as to how a moral dilemma should be resolved with other people who use higher stages of moral reasoning than the subject. Such controversies result in advances in level of moral reasoning (Blatt, 1969; Blatt & Kohlberg, 1973; Keasey, 1973; Kuhn, Langer, Kohlberg, & Haan, in press; LeFurgy & Woloshin, 1969; Maitland & Goldman, 1974; Rest, Turiel & Kohlberg, 1969; Turiel, 1966; Crockenberg & Nicolayev, Note 2).

While the above studies support the assumption that controversy leads to conceptual conflict which, in turn, promotes the transition to higher stages of cognitive and moral reasoning, simply presenting students with a differing opinion does not mean that a conflict will ensue. If the conflicts presented are not related to the students' existing stage of cognitive and moral reasoning as well as to their emerging stage, the conflicts are unlikely to be experienced (Inhelder, Bovet, Sinclair, & Smock, 1966; Inhelder & Sinclair, 1969; Langer, 1969). In addition, many of the above studies do not clearly indicate whether their results are due to controversy, direct conformity to social pressure, or to the imitation of models.

Taken together, however, the above studies do provide evidence that controversies among students can promote transitions to higher stages of cognitive and moral reasoning. Such findings are important as there

is little doubt that higher levels of cognitive and moral reasoning cannot be directly taught (Inhelder & Sinclair, 1969; Sigel & Hooper, 1968; Sinclair, 1969; Smedslund, 1961a, 1961b; Turiel, 1973; Wallach & Sprott, 1964; Wallach, Wall, & Anderson, 1967; Wohlwill & Lowe, 1962).

Quality Of Problem-Solving And Decision-Making

The interpersonal controversies, which lead to conceptual conflict and feelings of uncertainty; which lead to a search for additional information and experiences, greater accuracy of cognitive perspective-taking, and the transition to more mature cognitive and moral reasoning process; seem to promote high quality problem-solving and decision-making. Certainly, the purpose of controversy within a cooperative group is to arrive at the highest quality solution or decision that is possible. There are many social scientists who have noted the value of controversy for high quality problem-solving, decision-making, and learning (Dewey, 1933; Ewbank & Auer, 1946; Harnack & Fest, 1964; Howell & Smith, 1956; Johnson, 1970, 1973; Johnson & F. Johnson, 1975; Kelly & Thibaut, Petelle, 1964; Simmel, 1957). And there are studies which confirm such opinions (Boulding, 1964; Glidewell, 1953; Grimme & Johnson, 1978; Hall & Williams, 1966, 1970; Hoffman & Maier, 1961; Hoffman, Harburg, & Maier, 1962; Maier & Hoffman, 1964; Maier & Solem, 1952). Thus, there is evidence that controversies among members of a group will result in high quality problem-solving and decision-making. One of the factors affecting quality of problem-solving and decision-making is that disagreements provide a greater amount of information and variety of facts and a change in the salience of known information which, in turn, results in shifts in judgment (Anderson & Graesser, 1976; Kaplan, 1977; Kaplan & Miller, 1977; Vinokur & Burnstein, 1974). Furthermore, students who experience conceptual conflict resulting from controversy are better able to generalize the principles they learn to a wider variety of situations than are students who do not experience such conceptual conflict (Inagaki & Hatano, 1968, 1977).

Creativity

Creativity is a process of bringing something new into existence, consisting of a sequence of overlapping phrases, such as: (1) recognizing and experiencing a challenging problem, (2) gathering the necessary knowledge and resources for a long-term and intense effort to solve the problem, (3) experiencing an incubation period wherein a person temporarily withdraws from the issue after experiencing feelings of failure, tension, and discomfort due to the failure to solve the problem, (4) seeing the problem from different perspectives and reformulating it in a way that lets new orientations to a solution emerge in a moment of insight or inspiration (often accompanied by intense feelings of illumination and excitement), and, (5) elaborating, detailing, and testing the solution against reality.

Controversies, disagreements, arguments, debates, presenting opposing viewpoints and diverse information and ideas, are all important

aspects of gaining creative insight. There is evidence that such interpersonal interaction increases the number of ideas, quality of ideas, feelings of stimulation and enjoyment, and originality of expression in creative problem-solving (Bahn, 1964; Dunnette, Campbell, & Jaastad, 1963; Falk & Johnson, 1977; Peters & Torrance, 1972; Torrance, 1970, 1971; Triandis, Bass, Ewen, & Mikesele, 1963; Bolen & Torrance, Note 3; Torrance, Note 4). And there is evidence that controversies result in more creative problem solutions, with more member satisfaction, compared to group efforts that do not include controversies (Glidewell, 1953; Hall & Williams, 1966, 1970; Hoffman et al., 1962; Maier & Hoffman, 1961; Rogers, 1970). These studies demonstrated that controversies can encourage group members to dig into a problem, raise issues, and settle them in ways that show the benefits of a wide range of ideas being used, as well as resulting in a high degree of emotional involvement in and commitment to solving the problems the group is working on.

Summary Of Controversy Process

There is evidence, therefore, that controversy can arouse conceptual conflict, subjective feelings of uncertainty, and epistemic curiosity; increase accuracy of cognitive perspective-taking; promote transitions from one stage of cognitive and moral reasoning to another; increase the quality of problem solving; and increase creativity. These findings support the hypothesized process by which controversy promotes learning. That is, the situation begins with students categorizing and organizing their present information and experiences so that a conclusion is derived. When they realize that other students (or the teacher) has a different conclusion, conceptual conflict, uncertainty, or disequilibrium is aroused. The conceptual conflict leads to epistemic curiosity which, in turn, motivates a search for more information, new experiences, and a more adequate cognitive perspective and reasoning process. The more adequate cognitive perspective and reasoning process is derived from more accurately understanding the perspective and reasoning process of the students' opponents and adapting their own perspective and reasoning process accordingly. Next, a joint agreement is reached as to the correct conclusion, employing the more adequate cognitive perspective and reasoning process, and a higher quality and more creative solution to the problem is generated.

While controversy can operate in the above beneficial way, it will not do so under all conditions. As with all conflict, the potential for either constructive or destructive outcomes is present in a controversy. Whether positive or negative consequences result depends on the conditions under which the controversy occurs and the way in which it is managed. These conditions and procedures include:

1. the goal structure within which controversy occurs;
2. the differences among the students involved in terms of personality, sex, attitudes, background, social class, cognitive reasoning strategies, cognitive perspectives, information, and skills;

3. the amount of relevant information distributed among students;
4. the perspective-taking skills of the students; and,
5. the ability to disagree with another person without making the other defensive.

The Context Of Controversy

Deutsch (1973) emphasizes that the context within which conflicts occur has important effects on whether the conflict turns out to be constructive or destructive. There are two possible contexts for controversy: cooperative and competitive. A *cooperative context* exists when people perceive that they can obtain their goal if and only if the other people with whom they are linked can obtain their goals; if one person achieves his goal, all people with whom he is linked achieve their goal (Deutsch, 1962). In a *competitive context* people perceive that they can obtain their goal if and only if the other people with whom they are linked fail to obtain the goal; if one person achieves his goal, all other people with whom he is linked fail to achieve their goal (Deutsch, 1962). There are literally hundreds of studies documenting the relative effects of cooperation and competition (Johnson & R. Johnson, 1974, 1975). There are several ways in which a cooperative context facilitates constructive controversy while a competitive promotes destructive controversy:

1. In order for controversy to be constructive, information must be accurately communicated. Within a cooperative context communication tends to be open and honest, while in a competitive context communication tends to be nonexistent or misleading (Johnson, 1974; Johnson & R. Johnson, 1975). Cooperative contexts, compared to competitive ones, promote more accurate communication of information, more verbalization of ideas and information, greater efforts in seeking others' information and ideas, more attentiveness to others' statements, more utilization of others' information in more optimal ways, more willingness to be influenced by others' ideas and information, fewer difficulties in communicating with and understanding others, more confidence in one's own ideas and in the value that others attach to one's ideas, and greater feelings of agreement between oneself and others (Crawford & Haaland, 1972; Johnson, 1974; Johnson & R. Johnson, 1975; Laughlin & McGlynn, 1967). Blake and Mouton (1961) provide evidence, furthermore, that competition biases a person's perceptions and comprehension of viewpoints and positions of other individuals.
2. Constructive controversies require supportive climates in which people feel safe enough to challenge each other's ideas. Deutsch (1958, 1960, 1962) and other researchers (Johnson, 1974) have found that trust is built through cooperative interaction and destroyed through competitive interaction. Cooperativeness is related to beliefs that peers and authority figures are supportive and accepting of one as a person and of one's achievement efforts (Johnson & Ahlgren, 1976; Johnson, Johnson, & Anderson, 1978).

3. Cooperative learning experiences, compared with individualized ones, promotes a belief that controversy is constructive (Johnson, Johnson, & Scott, 1978).
4. Constructive controversy requires dealing with feelings as well as with ideas and information. There is evidence that cooperativeness is related to an ability to understand what other people are feeling and why they are feeling that way, while competitiveness is not (Johnson, 1975a, 1975b; Johnson, Johnson, Johnson, & Anderson, 1976).
5. How controversies are defined has great impact on how constructively they are managed. Within a cooperative context conflicts tend to be defined as problems to be jointly solved, while within a competitive context conflicts tend to be defined as "win-lose" situations (Deutsch, 1973; Rubin & Brown, 1975).
6. Constructive controversy requires that students recognize similarities between positions as well as differences. Students participating in a controversy within a cooperative context identify more of the similarities between their positions than do students participating in a controversy within a competitive context (Judd, 1978).

Heterogeneity Of People Involved In Controversy

Heterogeneity leads to potential controversy. The differences among students in terms of personality, sex, attitudes, background, social class, cognitive reasoning strategies, cognitive perspectives, information, and skills, potentially lead to diverse organization and processing of present information and experiences. Deriving different conclusions from one's present information and experiences begins the cycle of controversy. There is evidence that more controversy occurs in heterogeneous than in homogeneous groups (Fiedler, Meuwese, & Oonk, 1961; Torrance, 1961).

Because heterogeneity among students creates the potential for controversy does not mean that such controversies will be constructively managed. There is contradictory evidence concerning the effectiveness of homogeneous and heterogeneous groups in problem-solving. Several studies have found heterogeneous groups to be superior to homogeneous groups in terms of quality of group solution, creativity of group solution, and member satisfaction with the solution (Amaria, Biran, & Leith, 1969; Ghiselli & Lodahl, 1958; Goldman, 1965; Hoffman, 1959; Hoffman & Maier, 1961; Hoffman, Harburg, & Maier, 1962; Pelz, 1956; Triandis, Hall, & Ewen, 1965; Ziller, 1955; Ziller & Exline, 1958). Other studies have found that either homogeneous groups arrive at better solutions than do heterogeneous groups or that there is no difference between heterogeneous and homogeneous groups in terms of quality of group solutions (Altman & McGinnies, 1960; Falk & Johnson, 1977; Fiedler et al., 1961; Haythorn, Couch, Haefner, Langham, & Carter, 1956; Schultz, 1955, 1958; Shaw, 1960). The failure of heterogeneous groups to always outperform homogeneous groups raises the possibilities that when relevant expertise is lacking in the group, heterogeneity may not affect quality of problem-solving, or when group members do not have

the skills to exchange information effectively, heterogeneity may not be utilized productively. Each of these possibilities is discussed in the next two sections.

Relevant Information Available

If controversy is to lead to learning, the group members must possess information relevant to the solution of the problem on which they are working. The more information available, the easier it should be to solve their problem. There are a number of studies which indicate that groups which have more information about a problem usually perform better than do groups with less information (Goldman, 1965; Laughlin & Branch, 1972; Laughlin, Branch, & Johnson, 1969; Laughlin & Johnson, 1966; Laughlin, Kerr, Davis, Halff, & Marciniak, 1975; Tuckman, 1967). Having relevant information available, however, does not mean that it will be utilized. When the task is such that the correct answer is immediately recognizable when it is proposed, it tends to be immediately accepted (Laughlin & Bitz, 1975), but when the task is such that the correct answer is not immediately recognizable, it may take one group member to propose it and another member to support the answer before the group adopts it (Laughlin, Kerr, Davis, Halff, & Marciniak, 1975). Laughlin and his associates (1975), furthermore, found that when no member of a group knew the correct answer of a problem, the group would still figure it out about twenty-percent of the time, indicating that the quality of the group discussion can affect the successful solution of problems even when member expertise is low.

Perspective-Taking Skills

In order for controversies to be managed constructively, they need to take place within a cooperative context, students need to be sufficiently heterogeneous to disagree with one another, and the information relevant for jointly solving learning problems must be available. For heterogeneity to contribute to learning, and for information to be exchanged and utilized, students need a minimal level of communication skills. Perhaps the most important set of skills for exchanging information and opinions is perspective-taking. *Perspective-taking* is the ability to understand how a problem or situation appears cognitively and affectively to another person. The opposite of perspective-taking is *egocentrism*, the embeddedness in one's own perspective to the extent that one is unaware of other perspectives and of the limitations in one's perspective. The level of student's perspective-taking abilities will tend to affect the:

1. Amount of information disclosed: More information, both personal and impersonal, is disclosed when one is interacting with a person engaging in perspective-taking behaviors (Colson, 1968; Noonan-Wagner, 1975; Sermat & Smyth, 1973; Taylor, Altman, & Sorrentino, 1969).
2. Phrasing of messages so that others can comprehend their meaning: People high in perspective-taking ability are better able to

phrase messages so that others can understand than are people low in perspective-taking ability (Feffer & Suchotliff, 1966; Flavell, 1968; Hogan & Henley, 1970).

3. Comprehensive and retention of others' messages: Johnson (1967, 1968, 1971a) found that engaging in perspective-taking behaviors in conflicts results in increased understanding and retention of the opponent's messages and perspective. Flavell (1968), in a series of studies with children, found that perspective-taking ability facilitates the comprehension of messages from another person. Feffer and Suchotliff (1966) and Hogan and Heneley (1970) found similar results with adults.
4. Quality of problem-solving: During controversies perspective-taking behaviors, compared with egocentrically emphasizing one's own information and perspective, results in more creative and higher quality solutions (Falk & Johnson, 1977) and in greater gains in accuracy of problem-solving (Johnson, 1977).
5. Perceptions of learning experience: Perspective-taking behaviors promote more positive perceptions of the information exchange process, fellow problem-solvers, and the problem-solving experience (Falk & Johnson, 1977; Johnson, 1971b, 1977; Noonan-Wagner, 1975).

The presence of diverse information and opinions does not ensure that constructive controversy will take place. When information and insights relevant to solving a problem are distributed among group members, there is no guarantee that the information and insights will be exchanged in a way that ensures their utilization. The level of students' perspective-taking and other communication skills will influence the extent to which controversy occurs, information and insights are effectively exchanged, and the controversy is managed in a constructive rather than a destructive way.

Confirming Opponent's Competence

In order for controversies to be managed constructively, discussants need to be able to disagree with each other's ideas while confirming each other's personal competence. The amount of defensiveness generated in the opponent can be expected to influence the way in which conceptual conflicts are resolved (Johnson, 1971b, 1977). Disagreeing with other people while inputing that they are incompetent tends to increase their commitment to their own ideas and their rejection of one's ideas (Brown, 1968; Tjosvold, 1974). Tjosvold, Johnson, and Fabrey (1978) and Tjosvold, Johnson, and Lerner (1978) conducted a pair of studies in which disagreeing while confirming the other's competence was compared with disagreeing while imputing that one's opponent was incompetent. They found that confirmation, compared with disconfirmation of the opponent's competence, resulted in one being better liked, the opponent being less critical of one's ideas, the opponent being more open-minded to an more interested in hearing more of one's ideas, and the opponent being more willing to incorporate one's information and reasoning into the opponent's own analysis of the problem.

Summary of Conditions Affecting Outcomes of Controversy

Whether or not controvery among students leads to increased epistemic curiosity, more accurate perspective-taking, transition to a higher stage of cognitive reasoning, higher quality problem-solving, and greater creativity depends on the conditions under which it occurs. To be constructive, controversy needs to occur within a cooperative context; sufficient differences among students must exist to ensure diverse conclusions being derived from information and experiences; information relevant to the solution of the learning task must be distributed among students; students must have a certain level of competency in exchanging information accurately, especially the ability to view problems and situations from other people's perspectives; and students must be able to disagree with one another's ideas while confirming each other's personal competence.

Conclusions

Disagreement among students' ideas, conclusions, theories, and opinions is an important source of learning in all instructional situations. When occurring within facilitative conditions, there is evidence that such conflicts will create conceptual conflict, feelings of uncertainty, and epistemic curiosity; increase students' accuracy of cognitive perspective-taking; promote students' transitions from one stage of cognitive and moral reasoning to another; increase the quality of students' problem-solving; and, increase students' creativeness. There is also evidence indicating that the conditions affecting the constructiveness of controversy are the goal structure within which the controversy occurs, the heterogeneity among students, the amount of relevant information students' possess, the perspective-taking skills of students and the students' ability to disagree without imputing incompetence. While a great deal more evidence is needed to validate firmly the potential outcomes of controversy in instructional situations and the conditions which facilitate constructive outcomes, there is enough evidence to suggest that creating controversy is an important teaching strategy for increasing learning and intellectual development.

The available evidence also points towards some specific suggestions for teachers who wish to capitalize fully on the intellectual disagreements that arise within instructional situations (Johnson, 1979). Available research suggests that teachers who wish to promote constructive controversy should structure learning activities cooperatively, ensure that each cooperative group is heterogeneous, promote controversies within each cooperative group, teach perspective-taking and confirmation skills to students, and emphasize rational argument.

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